

COMPOUND MEASURES

Pearson Edexcel – Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Higher Tier

1.

13	196	P1	for vol A = $1400 \div 70$ (=20) or for mass B = 280×30 (=8400)	An answer of 350 from $70 + 280$ gets no marks
		P1	for density C = $\frac{1400 + "8400"}{"20" + 30}$ (= $\frac{9800}{50}$) or answer with digits 196	
		A1	cao	

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

2.

15	48	M1	for method to use a volume formula with correct substitution for the cone, sphere or hemisphere eg $\frac{1}{3} \times \pi \times 3^2 \times 10$ or $\frac{4}{3} \times \pi \times 3^3$ or $\frac{2}{3} \times \pi \times 3^3$ oe	May work without π or with an approximation of π ; must use the correct radius of 3 (and 10) in substitution Must be cone or hemisphere Accept 48π
		M1	for complete method to find total volume eg $\frac{1}{3} \times \pi \times 3^2 \times 10 + \frac{2}{3} \times \pi \times 3^3$	
		M1	(dep first M1) for correct partial simplification, eg 30π or 18π	
		A1	cao SC B2 for answer of 264 or 264π	

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Higher Tier

3.

13	1.01	P1	for 1.09×60 (= 65.4 or $\frac{327}{5}$) or 0.97×128 (= 124.16 or $\frac{3104}{25}$)	Note that the volumes may be converted to ml, eg 1.09×60000 (= 65400) Candidates working in ml must use 188,000 If an answer within the range is seen in working but then rounded incorrectly award full marks. Accept 1 for 1.00 Note that the correct value is 1.008.....
		P1	for 1.09×60 (= 65.4 or $\frac{327}{5}$) and 0.97×128 (= 124.16 or $\frac{3104}{25}$) or "65.4" + "124.16" (= 189.56 or $\frac{4739}{25}$)	
		P1	for a complete process to find the density of antifreeze eg ("65.4" + "124.16") \div 188 or $189.56 \div 188$ or $\frac{4739}{25} \div 188$	
		A1	for answer in the range 1.00 to 1.01	

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Higher Tier

4.

20	3.75	P1	works to find vol of frustum eg $\frac{1}{3}\pi(3.6)^2 \times 6.4 - \frac{1}{3}\pi(1.8)^2 \times 3.2$ or 86.858... – 10.857... (=24.192π or 76.00..)	781.7... by use of diameter does not get the mark [vol] is their volume which could be fit using the radius, using the diameter, or could be another value as long as it is stated as being the volume, or clearly intended from working. All figures must come from correct method shown.
		P1	works to find vol of hemisphere eg $\frac{1}{2} \times \frac{4}{3} \pi \times 3.6^3$ (=31.104π or 97.7....)	
		P1	mass of frustum as [vol]×density eg “76.00” × 2.4 (=182.4..) or mass of hemisphere as [vol]×density eg “97.7....”×4.8 (=469.037...)	
		P1	mean density as total mass ÷ total volume eg (“182.4..” + “469.037”) ÷ (“76...” + “97.7..”) or “651.4..” ÷ “173.7....”	
		A1	answer in the range 3.7 to 3.8	

Pearson Edexcel - Thursday 7 June 2018 - Paper 2 (Calculator) Higher Tier

5.

19	905	P1	for correct use of formula for the volume of a sphere eg $\frac{4}{3} \times \frac{4}{3} \times \pi \times r^3$ (= 576π or 1809...) OR $576\pi \times 4$ or 2304π or $7238...(\frac{4}{3} \times \pi \times r^3)$	We do not need to see what is in the brackets to award this mark. The contents of the bracket alone would score P0 Could be shown in several stages $\sqrt[3]{\frac{576 \times 4 \times 3}{4}} = \sqrt[3]{1728}$ Radius used must be clearly identified as their radius of the solid If an answer is given in the range but then incorrectly rounded, award full marks.
		P1	for a complete correct process to find r, eg $r = \sqrt[3]{\frac{576 \times 4 \times 3}{4}}$ or $r = 12$	
		P1	for a process to find the curved surface area eg $\frac{4 \times \pi \times [radius]^2}{4}$ (=144π or 452...) OR the surface area of both flat surfaces eg $(2 \times \frac{\pi \times [radius]^2}{2})$ OR complete expression for the total surface area eg $\frac{4\pi r^2}{4} + \frac{\pi r^2}{2} \times 2$ oe	
		P1	for process to find the complete surface area eg $\frac{4 \times \pi \times [radius]^2}{4} + (2 \times \frac{\pi \times [radius]^2}{2})$	
		A1	answer in the range 904.7 – 905 or 288π (SCB2 for an answer in the range 358.1 – 359.2)	

Pearson Edexcel - Tuesday 13 June 2017 - Paper 3 (Calculator) Higher Tier

6.

6		1.01	P1	fruit syrup 15×1.4 (= 21) or water 280×0.99 (= 277.2) or apple juice 25×1.05 (= 26.25)
			P1	(dep P1) for complete process to find the total mass e.g. “277.2” + “26.25” + “21” (= 324.45) or a weighted density eg $15 \times 1.4 \div 320$ (= 0.065625) or $280 \times 0.99 \div 320$ (= 0.86625) or $25 \times 1.05 \div 320$ (= 0.08203125)
			P1	(dep P2) for complete process to find the density eg “324.45” ÷ 320 (=1.01..) or “0.065625” + “0.86625” + “0.08203125” (= 1.0139..)
			A1	1.01 to 1.014

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7.

8	(a)		36.4	P1 start process eg method to find area of trapezium P1 complete process to find volume of tank P1 process to find time eg $\text{volume} \times 1000 \div 300$ P1 process to find 85% of volume or of time A1 for 36.4 or 36 mins 24 secs
	(b)			C1 explanation eg if the average rate was slower it would take more time, if the average rate was faster it would take less time

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8.

12			12.2	P1 begins process eg $150 \div 19.3 (= 7.77..)$ or $150 \div 8.9 (= 16.85..)$ P1 complete process to find total volume P1 complete process to find the density of the alloy A1 for answer in range 12.1 to 12.2
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9.

17	$l = 20x$ $x = 3$	20736		P1 for a first step to solve the problem eg method to find the slant height of the cone or the volume equals $768\pi x^3$ P1 for setting up an equation for the curved surface area in terms of x eg $2160\pi = \pi \times 12x \times 20x$ P1 for complete method to find the value of x P1 for a method to find the volume or value of V A1 cao
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Pearson Edexcel - Thursday 9 June 2016 - Paper 2 (Calculator) Higher Tier

10.

14			3	5	M1 for a complete method to find the area of the cross section, eg. $15 \times 2 + (12 - 4) \times 2 + 15 \times 2 (= 76)$ or for finding the volume of a relevant prism, eg. $15 \times 2 \times 120 (= 3600)$ “(12 - 4)” maybe just seen on the diagram M1 for a method to find the volume of the bar, eg. “ $76 \times 120 (= 9120)$ ” or fit “area of cross section” $\times 120$ provided “area of cross section” includes a method to find the area of at least two relevant rectangles M1 for “volume” $\times 8$, eg. “ $9120 \times 8 (= 72960)$ ” or $250 \times 1000 \div 8 (= 31250)$ NB “volume” must be dimensionally correct M1 (dep on previous M1) for $250 \div (\text{“volume”} \times 8) \div 1000$, eg. $250 \div \text{“}72960 \div 1000\text{”} (= 3.4265....)$ or “ $31250 \div \text{“}9120\text{”}$ ” A1 for an answer of 3 with correct working
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Pearson Edexcel - Wednesday 4 November 2015 - Paper 1 (Non-Calculator) Higher Tier

11.

19			756π	5	M1 for $\frac{1}{2}\pi r^2 \times 10$ (=270 π) A1 for $r = 9$ M1 (dep on M1) for $\frac{1}{2} \times \frac{4}{3} \pi \times 9^3$ (=486 π) M1 for 270 π + "486 π " oe A1 cao
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Pearson Edexcel - Monday 8 June 2015 - Paper 2 (Calculator) Higher Tier

12.

16		Volume of A = $\frac{140}{0.7} = 200$ Volume of B = $\frac{128}{1.6} = 80$ Mass of C = 140+128 = 268 Density of C = $\frac{268}{280}$	0.957	4	M1 for finding the volume of either liquid A or B or the mass of liquid C M1 for a complete method to find the volume AND mass of liquid C M1 (dep M2) for "total mass" ÷ "total volume" A1 for 0.957 to 0.96
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Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

13.

20			128π	5	M1 for $\frac{4\pi r^2}{2} = 32\pi$ oe A1 for $(r =) 4$ M1 for $2 \times \pi \times 4^2 \times 10$ (=80 π) or $\pi \times 4^2$ (=16 π) or ft their r M1 for 32 π + "80 π " + "16 π " oe or 402.1 –402.3 or ft their r A1 cao
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AQA GCSE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

14.

26	$(x - -2)^2$ or $(x + 2)^2$ or $a = 2$	M1	oe implied by $x^2 + 2x + 2x + 4$ (+ b) or $x^2 + 4x + 4$ (+ b)
	$1 = (3 + 2)^2 + b$	M1dep	oe
	-24	A1	accept (-2, -24)
	Additional Guidance		
	$(x - 2)^2$ $1 = (3 - 2)^2 + b$		MO MO